

REMARKS

Claims 1-9 and 11-12 remain pending after amendment.

Claim Amendments

Various editorial revisions are made in the claims. Claim 10 is cancelled and certain limitations thereof added to claim 1. New claim 12 is added, support for which resides in claim 2. No new matter is added by this amendment.

Objection to Claim 5

Claim 5 is objected to for the reason that "thiophenes" and "alkylthiophenes" are misspelled. In response, claim 5 is amended in a manner believed to overcome the objection.

The objection is accordingly moot and should be withdrawn.

Rejection under 35 USC 112 (paragraph two)

Claims 2, 9 and 10 stand rejected under 35 USC 112 (paragraph two) as not distinctly claiming the invention. This rejection is respectfully traversed.

In response, claims 2 and 9 are amended in a manner believed to overcome the rejection. Claim 10 is cancelled, and certain limitations thereof added to claim 1.

The rejection is accordingly without basis and should be withdrawn.

Rejection under 35 USC 103(a)

Claims 1-11 stand rejected under 35 USC 103(a) as being unpatentable over Stine et al in view of Lyman et al. This rejection respectfully is traversed.

Stine et al is directed to a process for dehydrogenation of an isobutene-containing stream, oligomerization of the resulting isobutenes, and hydrogenating the obtained oligomers. The oligomerization zone effluent comprises C₇₊ olefins, particularly C₈₋₁₂ olefins having boiling points from 100°F to 450°F.

In the saturation step of Stein et al, the heated saturation zone feed enters the two saturation reactors arranged in series with the feed passing through the reactors. The series arrangement provides greater control of temperature. The reaction temperature and pressure in the hydrogenation (saturation) step are, according to the example, 530°F and 485 psi - this clearly means that the reaction is carried out in the vapor phase. This is also confirmed in the specification at column 14, lines 33-34 wherein it is stated: "Preferably, the reaction conditions are selected to keep the hydrocarbon feed in vapor phase". Further, at column 14, line 41, the preferred hydrotreatment reactor contains a fixed bed, which obviously means that a conventional fixed bed hydrogenation reactor is used for reactions carried out in the vapor phase.

The Stine embodiment is not satisfactory. Higher concentrations of feed result in greater temperature increase in the

reactor, and this in turn causes the emergence of hot spots, the control of which is difficult. Stine et al is silent with regard to the use of trickle bed reactors, which can be used with a liquid feed - the embodiment now claimed by applicants.

Stine is further silent with regard to the problems relating to sulfur-containing compounds as well as to the removal of such compounds.

By contrast, in the claimed invention, the hydrogenation step is carried out in two steps in a trickle-down reactor using liquid olefin feed in the presence of hydrogen flow.

The additionally-cited Lyman reference does not cure the deficiencies of Stine. Lyman et al relates to a conventional process for catalytic polymerization of light olefins such as butanes into higher molecular weight fuels using solid phosphoric acid catalysts, followed by hydrogenation in the presence of high amounts of conventional sulfur-removing catalysts, such as nickel-containing catalysts, which are rapidly deactivated, or molybdenum-containing catalysts. Applicants do not rely on the use of such catalysts. According to Stine et al at column 1, lines 30-40, such processes do not result in the desired quality of product, or have other disadvantages.

The combined references do not result in the claimed invention. The references, taken either separately or together, do not suggest

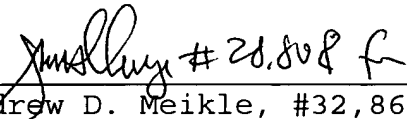
the claimed method for the production of a high quality and sulfur-free product in an efficient and economic manner.

The claimed invention is neither disclosed nor suggested by the cited prior art. The rejection is accordingly without basis and should be withdrawn.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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